bases their backbone.

And I think that most of the cable operators realized to the extent that they became partners with the cable companies -- with the telephone companies back then they would have lost their independence. And cable would not be like it is today had they entered into those lease arrangements.

MR. OXENDINE: See, Herb, we are not in disagreement, but do you understand what I'm talking about? The Commission's equity requirements right now preclude -- are you not in favor of them opening them up so that we as minorities will.

MR. WILKINS: I am in favor of them opening the ownership process up. But I also think if the process itself, the need to have a partner to go into the auction really defines who will ultimately own and control the license down the road the.

The designated entity may own it today, but down the road the designated entity will not

own that license if the obligation is to have a big deep pocket at the start of the race.

MR. OXENDINE: See, Herb, I would like to have that problem. I don't want you to solve that problem for me. I'd appreciate -- I think we make a mistake among ourselves.

I don't want to walk away from here and say the reason why I couldn't be -- I don't have a minority preference is because Herb Wilkins who is very well respected thinks that down the road I'm going to be taken advantage of. I'll take care of myself down the road, but just give me the opportunity to play now. And that is what we are talking about now.

MR. WILKINS: When I made my first remark I said that I thought that the Commission should take an equity stake -- or the government should take an equity stake in the designated entity license -- company. And that would solve the problem.

MR. OXENDINE: They are not going to do that, but they can give --

MR. WILKINS: I think if they can figure out how to monetize that equity stake that they will do that. I think that they can monetize that equity stake.

I think that the folks on the street would find that a rather unique opportunity to make a buck, and they will do it on that basis.

MR. PEPPER: This has actually been fascinating, but if I could just shift for a second to actually ask Paul a question because in an earlier round he had said something I found quite intriguing, that is what do you see as the key functional characteristics of PCS in order for it to work, to compete, to attract capital, to make money at the end of the day?

And I think I heard you saying something a little bit different earlier than what you said several months ago, but I'm not sure.

MR. RISSMAN: Well, aside from a niche application which I think many of us agree probably is only a short term -- only has short term viability, what we are seeing now in both the

cellular industry and in the wire line industry is a convergence, Pacific Bell is dying to get PCS spectrum because it doesn't have any wireless spectrum at the moment so that it can integrate -- essentially what it is trying to do is protect itself from competition because the cable guys, once they get their hands on PCS spectrum will try to use PCS as a way of implementing fixed wireless over their cable plant.

Once you have fixed wireless, the telcos who see this as a major threat will also come up with a fixed wireless. And they will say, well, look, our competitor is offering you fixed wireless. We will offer you fixed wireless and more. We will offer you fixed wireless and wireless in your car. And you can do it with one handset and we will give you bill and we will give you one price and you will find that a more attractive proposition than just using -- having a fixed wireless service and then having to go to your cellular carrier for vehicular service. You carry two phones around, get two bills, et cetera,

et cetera, et cetera, and not have it all be seamless.

So I think the competitive dynamics of what is going on are driving everybody to the same conclusion. And that conclusion is if we don't offer the same services that our competitor offers we will lose.

That the ultimate conclusion of that dynamic is that everybody offers all services.

UNIDENTIFIED SPEAKER: What is the suite of services that you see as critical.

MR. RISSMAN: Essentially it will be the kind of things that the one number -- one person, one number providers are trying to implement now with their advanced intelligence networks, where you will be able to be reached anywhere. You will be able to use the same handset no matter what speed you are traveling at with one phone number. That is the personal -- you know, the personal communication vision as it was originally set up.

MR. PEPPER: So I have to able to use it in the home with no additional charges? This

morning we had somebody from GE talking about --

MR. RISSMAN: No, no, no.

MR. PEPPER: Actually it is somebody else. It was somebody from the Yankee group talking about different pricing bands, where if you use it in your home or on your premises there is no air time charge.

As us move away from your home, the further away you get the higher the air time charge. If you use it in your car at high velocity that is the peak charge but you are able to use the same device and you may not have any airtime charges for it.

On the other hand, depending upon how you use it there is -- there rather will be air time charges. Is that the kind of services that you see evolving?

MR. RISSMAN: I think people will be able to charge a premium because instead of having to use two phones you only have to use one phone. And with all of the intended efficiencies in that.

So nobody is going to pay .50 a minute to

use the phone in their house, but if paying .10 a minute to make a toll call, an inter lateral toll call, and I can use my wireless phone and pay .12 a minute, and I cannot have to use my land line phone anymore, I would consider that as long as I could use the phone in all contexts.

Now, some people want a phone in their house just because they like to have a phone number at their place. A lot of other people wouldn't find that to be particularly satisfying.

MR. PEPPER: I guess the question for you then is if somebody develops a service that falls short of doing what you just described, will money be available from the investment community for that form of service.

MR. RISSMAN: I think what we are all saying is not as much money.

MS. PERETSMAN: Not as much money because it will rely on the perception that there is a franchise value that is that spectrum isn't being optimized and it could be sold or transferred to somebody else who could use it in a package and

optimize it. So the financing will come off the -- if you will the view of the end game rather than the business in and of itself.

MR. PEPPER: So the need to provide a full spectrum of services is crucial up front in order to attract the up front financing?

MS. PERETSMAN: No. I don't think you are saying that?

MR. RISSMAN: No, I'm not saying that either. You don't have to -- but to attract the most financing, yes. And also if you can offer an upgrade path that is a strategically clear one you will be able to get financing if -- nobody is going to put $2 billion dollar worth of capital equipment in their MTA tomorrow. Everybody has an upgrade path.

So as long as you can strategically articulate it and as long as you have a plan to eventually provide -- be a full-service provider.

MR. PEPPER: What is your estimates of the cost of being a full-service provider on a particular block? Let's take any 30 megahertz

block across the country. What is it going to cost.

MR. RISSMAN: I have no particular expertise. I would refer to David Ried (phonetic) on that. You know, $700 a subscriber, whatever.

MR. PEPPER: Can you talk maybe a little bit about the current cost structure of cellular in terms of what it costs to get a new subscriber and where those costs are and what that means for -- you heard a lot this morning and the panel right before yours about whether or not cellular can lock customers in or not. What is your take on that?

MR. RISSMAN: Well, the incremental capital expenditures between, say, five to seven hundred dollars for a subscriber.

MR. PEPPER: But that's in network or is that --

MR. RISSMAN: Yes. That is in towers, radios, whatever, new cell sites.

Then there is a marketing charge that is around $350, $400, $450 per new subscriber. And that goes up to $800 per gross subscriber because

20 percent of your subscribers leave the system every year.

So all in -- and that does not include your per minute charge. But we are talking, you know, a good thousand, 11 hundred 12 hundred dollars per subscriber just to get the guy on your system.

MR. PEPPER: Is much of the cost associated with the subsidy on the equipment?

MR. RISSMAN: Equipment subsidies --

MR. PEPPER: The subscriber equipment I'm talking about.

MR. RISSMAN: Yes, there is usually a couple of hundred dollars of equipment subsidy in that $350 to $400 figure.

MR. PEPPER: Mark, Nancy do you agree or disagree?

MS. PERETSMAN: We are in the same magnitude.

MR. PEPPER: You were here this morning or earlier when there was a disagreement over how difficult it would be to take an incumbent cellular

subscriber away from cellular and migrate them to a new PCS service. What is your take on that?

MS. PERETSMAN: I'm sorry. I wasn't here this morning.

MR. PEPPER: Actually, it was this afternoon. It was the panel immediately before this one.

Mark, I think you were here.

MR. ROBERTS: I think mainly it is going to be function of service and price. If you are offering an equivalent service where you have the capability of doing high speed hand off, similar to a cellular service provider. And I would not think it would be necessary to offer nationwide or, you know, roaming in the sense that cellular says they offer it on a nationwide basis.

But if could you offer roaming in an economically viable region, you know, Baltimore/Washington or the LA basin, something like that, about the size of an MTA, for example, I think that it would be fairly easy to take a cellular customer away based upon price.

The general consensus of most of the market trials of PCS that have been done are that about 80 to 90 percent of the consumers really want full-cellular mobility. And they are not satisfied with much less than that.

But what you find is they are not satisfied paying more than $40 a month for it versus the $80 a month they are currently spending for about 1/10 as much as how they -- or about half as much use as what they would like what they would like.

MR. PEPPER: In terms of what you understand about the existing cellular cost structures and operation what is the ability for cellular operators to lower their prices to get it down to the $40 a month target.

MR. ROBERTS: If you look at first of just the tangible returns on investment over the last decade you will find that the average return for a wire line telecom company is about 12 to 13 percent.

The average return on tangible capital

for a cellular company has been 30 to 40 percent which I think accounts partially for their ability to raise the financing that they have.

Also, I think it accounts for the attractiveness of this industry as SMR players and others have come into it. Their ability to offer PCS services on new spectrum I think would be probably about half the infrastructure costs they are spending now because to a large extent I think a number of the efficient operators would try to utilize the same tower sites.

And tower site acquisition is the largest fixed cost of a cellular network. If on the other hand you're a wire line company or cable telephone company or particularly a local exchange carrier that for some reason does not have a cellular overlap in that area you could probably deploy a PCS network for about half again that much, maybe $250 to $300 a subscriber. Now, that would be just the infrastructure costs not counting marketing.

Then further the digital technologies that they are talking about I think you heard from

Jerry Waylin (phonetic) earlier this morning. GTE has talked publicly about using a digital technology called CDMA where they would be able to have the capacity in suburban areas where the hand off speeds are slow and they already have a large amount of over capacity because they built their network to try to handle peak loads during rush hour and in business commuter corridors that they would be able to offer in a suburban area what amounts to free calling. It's about a thousand minutes of use per month for a flat rate of $40.

Now, that price begins to go up as you move out onto the roadway or into what they call a premium corridor.

MR. PEPPER: So essentially what you are describing is it begins to look an awful lot like the PCS service you described.

MR. ROBERTS: Yes.

MR. PEPPER: Or I guess Paul described.

MR. ROBERTS: Exactly.

MR. RISSMAN: If I could just add on to that. Vanguard (phonetic) Cellular in a recent

presentation forecast that their cost would be down to about .08 a minute after they have fully implemented their digital technology, and that they would be planning on charging .20 a minute, so half of what they are charging now.

MR. PEPPER: One of the questions that is really important and one of the reasons that we ask this group to get together is your assessment of you know how much capital will be available with what difficulty or ease for potential licensees.

Paul started off by talking about -- I think you used the phrase hostile environment that PCS would be moving into.

Notwithstanding that, it sounds to me like you are saying that capital will be available.

MR. RISSMAN: It really depends on A, who the operator is, B, how much spectrum they have got, and C, whether they have a good business plan. And those things are so variable.

MR. PEPPER: And two of those three don't reside here at the Commission. How much spectrum

might reside here not definitely. Because who the management is and what the business plan is, we can't do anything about that.

MR. RISSMAN: Right.

MR. PEPPER: What are the things that we can that will make it more likely that somebody who has a good business plan and has a good management team that will have capital available.

MR. RISSMAN: One of the things that unfortunately hasn't been done earlier is the auctions, the combinatorial nature of them. Am I allowed to comment on this?

MR. GIPS: Yes. Tell us about combinatorial auctions.

MR. RISSMAN: All right. Okay. You know, the combinatorial nature of the auctions made some companies think that they were going to need a super computer to decide how to some condition need assume computer to decide how to bid.

And MCI voted with its feet. They went off and bought Nextel (phonetic). AT&T may have

McCaw (phonetic) California.

The long distance companies benefit from having a large scope quasi nationwide PCS license more than anybody. And MCI wanted PCS publicly at least more than anybody.

And in a since the awkward nature of the auctions drove them away. The simpler the awards are, the easier it will be for a company -- these companies are not -- these companies are risk averse, and they are impatient. And they don't want to do stuff that requires that much effort.

So that if you make it too difficult for them to think of ways to get the spectrum that they feel they want, they just won't wait around.

Now, fortunately for you maybe, Nextel (phonetic) is not there anymore. But I still think on a subsidiary level that the more holders there are of licenses, the harder it will be to get the license holders together.

People will simply get sensory overload and they will be negotiating with everybody and they won't know who is firm and who is not.

Letters of intent will signed. Letters of intent will be busted. And it will adds meaningfully to the amount of time that people get these things together.

And as we have been saying, since your -- since the cellular carriers are trying to preempt your business and they are moving very quickly, time to market is really very important.

MR. PEPPER: So -- I know you couldn't be here earlier. One of the presenters earlier said aggregation was no problem. And that the market will correct for any defects that we have in our allocation plan. And if it turns out that the geographic areas are too small, no problem, there will be aggregation. If the blocks of spectrum are too small, don't worry, there can be aggregation.

But what you are saying is that there are transaction costs and time delays with that?

MR. RISSMAN: Yes, I'm saying yes in 10 years that will all be taken care of.

MR. PEPPER: What about between now and 10 years. What is your estimate? Have the three

of you maybe looked at what the impact of relying on aggregation could do in terms of delaying, getting to the point where there would be sufficient either spectrum blocks or geographic licenses.

MR. RISSMAN: No, but MCI isn't there any more. I rest my case.

MR. PEPPER: Mark or Nancy?

MR. RISSMAN: Go ahead.

MS. PERETSMAN: We don't have any particular opinion in terms of time frame, but let us presume it is more than a year or two. Take the absurd case of 10 years sort of out of the picture, I think the point that is in front of us all is regardless of how long it is, on the theory the time is of some essence here in terms of relative competitive positions, that you are really trading off a time frame for that aggregation against the timeliness of trying to get the future prospects of the business funded earlier rather than later. So it is a tough tension.

MR. PEPPER: What would you do if you

want to avoid the aggregation delay? What should we do to reduce that delay in terms of -- again, this is -- you know, in the context you are here today, talking about reconsideration of our PCS allocation. What would your recommendation be in terms of reducing the delay on aggregation on either geography or spectrum?

The implication is what we did is insufficient because --

MS. PERETSMAN: No, no, no. Right. Yes, I understand the question. I think that there are the two aspects to that question and I'm going to reserve the right to come back at you on this one because it is an interesting question.

The first is that -- the question is first how much of the seepage are you willing to tolerate because you just don't have -- there is a financing question in terms of the time delay. There is also economic seepage with both those transaction cost.

And one would think that to the extent that one of your tasks here is to try to minimize

subsequent seepage as these aggregations take place, that maybe we are all better off trying to first out of the box optimize the sizing question.

And so my recommendation would be simply spend a lot more time thinking about the sizing question rather than setting up a process that would expedite aggregation but allow for some seepage and all kinds of the cumbersome parts of transfers.

MR. PEPPER: By sizing you mean geography or spectrum or both.

MS. PERETSMAN: Actually I was thinking more about geography.

MR. ROBERTS: First of all I would point out that the gentleman that thought that the market would take care of all the aggregation problems also said that he thought the stock market evaluations were always correct. So it is unfortunate he didn't leave the three of us his phone number.

I think the best thing that you could do to alleviate the risk -- and to the extent you

alleviate the risk you increase the amount that potential licensees are willing to bid for the licenses -- would be to hold to a 30 megahertz block, at least 30 megahertz of contiguous spectrum because as you have heard today that will allay the fears of those who see PCS as a, you know, very threatened service from the cellular service providers.

Secondly, I take the view that the MTA license size is a reasonable license size. It provides coverage in a rational economic area. I think in -- so having the MTA as a minimum number license size would probably be the best thing because there you do away with two things.

You do away with the need to do extensive amounts of aggregation of spectrum blocks. You do away with the need to do a lot of aggregation across geography. And then the third issue is almost self-satisfying given the first two, which is you need to shorten the time to market as to the shortest possible time frame both in terms of licensees' perceptions of how long it is going to

take them after winning a license that they are going to be able to introduce service, A, and B, the time frame in which you award the licenses.

I see it as a fairly simple function. The longer the delay before PCS is in the market the lower the future expected investment return, and higher the cost of capital is going to be.

MR. PEPPER: You would agree with Nancy that aggregation -- and agree with Paul that aggregation adds delay?

MR. ROBERTS: Aggregation adds significantly to delay. It also raises the risk profile and the cost of -- I mean there are very high transaction costs.

MR. HALLER: Without regard to how we might do it are you saying that we should make every license 30 megahertz and MTA? Have no other options? That is what they would all be?

MR. ROBERTS: To the extent that we think that 30 megahertz is the minimal viable license size and that an MTA is sort of the minimum viable geographic size, if you are going to bid --

particularly if you are going to try to raise money to bid for the spectrum I guess that would be the ideal circumstance.

MR. PEPPER: I guess the question that maybe Ralph is asking -- from where I'm sitting I see the whole group. And I see Mr. Wilkins here sort of gasping for breath and especially as what he was talking about earlier really a very different kind of service I think.

I mean you are talking about something which is going to be the full-service highly mobile compete with cellular. And I think Mr. Wilkins is talking about something that is, I think, different -- please correct me -- where you are looking at smaller blocks, lots of licenses, much more localized and much more of a niche service.

And I guess the question is the extent to which -- can both visions coexist within what we are calling broad band PCS.

MR. ROBERTS: I guess I'll just finish out since you started asking me what the ideal world would be.

I think they could coexist. Now this is a little far afield for me because I'm not a -- this is legal and all of this. But if you were to mandate resale for example so that if a 30 megahertz licensee has just won the license, and he is starting to build out, if he was obligated to resell to service providers -- and even particularly if he was obligated to sell to designated entity service providers a certain percentage of his spectrum for some period of time or under some tariff agreement then I think you could see a proliferation of all sorts of niche services and technologies to fulfil those service needs.

But that's -- like I said, that is very far afield from my area of expertise.

MR. PEPPER: I can see Mr. Oxendine sort of staring at me from the other side because of his concern earlier about that doesn't really end up providing equity and control.

These are extremely tough questions as we try to balance them.